Linda Kisenger IL-22-06
DLPC

U.S. INDUSTRIAL CHEMICALS CO.
Division of National Distillers and Chemical Corporation • P.O. Box 218, Tuscola, Illinois 61953 • (217) 253-3311

May 6, 1980

Illinois Environmental Protection Agency
Division of Land Pollution Control
Manager, Technical Operations
2200 Churchill Road
Springfield, Illinois 62706

Dear Sir:

USI DISPOSAL WELL NO. 1
NPDES PERMIT NO. IL 0000141

During April, 1980, the injected volume was 12.329 million gallons and the cumulative is 1,211,733 million gallons.

Operation was normal.

Very truly yours,

L. R. Hays Engineering Manager

mh

Attachments

USI

cc: Illinois Environmental Protection Agency
Division of Land/Noise Pollution Control
Technical Operations Section, Hydrology Unit
2200 Churchill Road
Springfield, IL 62706

Illinois State Water Survey
Post Office Box 232
Urbana, IL 61801

Illinois State Geological Survey
Natural Resources Building
University of Illinois
Urbana, IL 61801

ANALYSIS DATA

WELL U.S.I. CHEMICALS NO.1 TUSCOLA, ILL. MONTH April, 1980

	WEEK ENDING DATES				
	4-6-80	4-13-80	4-20-80	4-27-80	
SPEC. GRAV.@25°c	1.010	1.010	1.010	1.010	
PH	2.9	2.6	2.4	2.4	
T.D.S.-Mg/L	4605	4506	4807	4453	
T.O.C.-Mg/L	126	172	122	136	
S.S.-Mg/L	23	50	17	19	
P-Mg/L	646	641	697	634	
SO_4-Mg/L	1591	1613	1515	1678	
F-Mg/L	188	180	185	195	
C_L-Mg/L	55	60	70	60	
C_A-Mg/L	520	500	540	480	
Mg-Mg/L	72	76	80	78	
C_R-Mg/L	.48	.54	.44	.50	
NA-Mg/L					
K-Mg/L					
Hg-PPB					

Sample Temperature °F 57
Dynamic Viscosity @ 100°F ASTM D445-72 0.7417

INJECTION DATA

WELL U.S.I. CHEMICALS Nº. I - TUSCOLA, ILL. MONTH April, 1980

	INJECTION DATA					ANNULUS PSIG	
DATE	HOURS	*M. GALLONS	CUM. M. GALLONS	MAX. PSIG	MAX. GPM	MAX.	MIN.
1	24	418	1199822	105	300	135	126
2	24	400	1200222	98	285	160	130
3	24	398	1200620	98	285	130	125
4	24	404	1201024	98	285	130	126
5	24	407	1201431	100	290	150	145
6	24	402	1201833	100	285	160	145
7	24	400	1202233	100	285	160	145
8	24	402	1202635	98	285	140	125
9	24	398	1203033	98	285	130	125
10	24	402	1203435	98	285	135	125
11	24	413	1203848	98	285	130	125
12	24	396	1204244	101	285	135	125
13	24	400	1204644	95	285	130	125
14	24	416	1205060	110	295	140	120
15	24	427	1205487	112	300	168	135
16	24	413	1205900	105	300	158	140
17	24	410	1206310	105	300	165	145
18	24	407	1206717	110	300	172	140
19	24	432	1207149	110	300	171	138
20	24	404	1207553	110	300	170	140
21	24	408	1207961	110	300	170	135
22	24	412	1208373	110	300	170	145
23	24	416	1208789	105	300	160	125
24	24	427	1209216	105	305	130	125
25	24	414	1209630	105	305	160	130
26	24	415	1210045	105	305	160	120
27	24	429	1210474	105	305	160	125
28	24	420	1210894	105	300	128	125
29	24	418	1211312	105	300	148	125
30	24	421	1211733	105	300	162	145
31							

*M = 1000

SIGNED [signature]

UIC Files
Blue Folder

217/782-6760

March 31, 1980

Mr. Robert L. Kylander, Technical Manager
U.S. Industrial Chemicals Company
Post Office Box 218
Tuscola, Illinois 61953

Re: Permit#IL0000141

Dear Mr. Kylander:

The USI waste disposal well and related facilities were inspected by Rauf Piskin of this Agency on March 27, 1980.

Mr. Rex Hays and you were present at the time of inspection.

The inspection disclosed that your waste disposal well and related facilities (storage ponds, pumps, recorders, etc.) are being operated and maintained in accordance with both Chapter 3: Water Pollution Regulations of the Illinois Pollution Control Board and conditions of the referenced permit.

Your efforts to keep the above disposal facility in good operating condition are appreciated.

Sincerely yours,

Rauf Piskin

Rauf Piskin, Manager
Hydrogeology Unit
Division of Land/Noise Pollution Control

RP:mkg

March 31, 1980

Steve Baldwin - DWPC/FOS/Region IV (C.E.)

Rauf Piskin - DLPC

USI - deep well

The deep well injection well for liquid industrial waste was inspected on March 27, 1980. The inspection indicated that the deep well and related facilities (pond, pumps, etc.) were in general compliance.

cc: UIC-file

RP:mkg

ENVIRONMENTAL PROTECTION AGENCY - STATE OF ILLINOIS

INSPECTION REPORT - DEEP (SHALLOW) WELL DISPOSAL

Douglas Co. E.P.C. Region # C Date 3/27/1980

Tuscola / U S I Industrial Letter Sent (Yes or No) No
(Location) (Responsible Party)

Samples Taken: Yes( ) No(✓) Time 10:30 am Weather Sunny
Ground Water ( ) Surface ( ) Waste ( )
Photos Taken: Yes( ) No(✓) Interviewed Mr Kyler, Mr Hayes Inspector Rory Piskin

Previous Inspection 4/28/78 Previous Correspondence _/_/_

OPERATIONAL STATUS		TYPE OF OPERATION		AUTHORIZATION	
Operating	(✓)	Deep Well Disposal	(✓)	E.P.A. Permit	( )
Standby	( )	Shallow Well Disposal	( )	Variance	( )
Non-Operating	( )	Other _____	( )	Board Order	( )
				NPDES Permit	(✓)

E.P.A. Permit #: IL0001141 NPDES Permit Expiration Date: 3/31/1981

EVALUATION

Disposal Well: Injection rate 350 gpm, Permitted rate 400 gpm,
Injection pressure 110 psig, Permitted pressure 250 psig,
Annulus pressure 140 psi
Number of disposal wells 1
Waste discharged into the permitted well, Yes(✓) No( )
Gauges operational, Yes(✓) No( )
Strainer ~~Filter~~ operational, Yes(✓) No( )
Filter by-passed, Yes( ) No(✓)
Transmission pipes in good maintenance, Yes(✓) No( )

Emergency Storage: (Lagoon, pond, basin, etc.)
Estimated total storage capacity _____ gallons
Estimated available storage capacity _____ gallons
Waste generation rate 350 gpd gpm
Number of storage days _____

Waste ponded outside of storage	Yes( )	No(X)
Waste flowing out of storage	Yes( )	No(X)
Waste seeping out of storage	Yes( )	No(X)
Evidence of past flow or seep	Yes( )	No(X)
Flow or seep entering surface water	Yes( )	No(X)
Intentional discharge	Yes( )	No(X)
Levees in good maintenance	Yes(X)	No( )

Maximum depth of storage 20-25 ft.
Estimated depth to ground water _____ ft.

General Compliance (✓) Improvement Needed ( ) Improvement Observed ( )

Signature of Inspector [signature]

Signature of Permittee [signature]

NOTE: (1) If necessary, use additional letter size paper signed by inspector and permittee.
(2) Signature of permittee does not necessarily imply agreement with the above-noted observations.

RC:LH/78

U.S. INDUSTRIAL CHEMICALS GROUP
Division of National Distillers and Chemical Corporation • P.O. Box 218, Tuscola, Illinois 61953 • (217) 253-3311

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

February 6, 1978

Thomas E. Cavanagh, Jr.
Manager, Permit Unit
Technical Operation Section
Division of Land/Noise Pollution Control
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62702

Gentlemen:

Enclosed are two (2) copies of Form D - Operation Permit Renewal for USI Disposal Well #1 (Permit No. 1977-UIC-3-OP). This information is submitted for your evaluation and approval.

Very truly yours,

T. J. Tadler
Plant Manager

mh

Enclosures

USI

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

DIVISION OF LAND/NOISE POLLUTION CONTROL

2200 Churchill Road

Springfield, Illinois 62706

(217) 782-6760

APPLICATION FOR A PERMIT

FOR WELL INJECTION

FORM D - OPERATION PERMIT RENEWAL

For Agency Use

Received:

Reviewed:

Reviewer:

O.P. issued:

O.P. No.:

1. Name of applicant: U.S. Industrial Chemicals Co.
2. Telephone: 217-253-3311
3. Mailing address: P.O. Box 218 Tuscola, IL 61953
4. Operation Permit No.: 1977-UIC-3-OP
5. Date of application: Feb. 6, 1978
6. O.P. issuance date: May 13, 1977
7. O.P. expiration date: May 13, 1978
8. List the tests and logs, and attach a copy of them, indicating the condition of injection tube, casing and well structure:

Requirements of special condition No. 1 of permit have been met and accepted by Illinois EPA on October 14, 1977.

9. Were any of the permit conditions, the IPCB Regulations and/or provisions of the Environmental Protection Act violated? ____ Yes __X__ No

If yes, explain:

10. Do equipment and facilities related to well injection facility operate properly? __X__ Yes _____ No

If no, explain:

11. Was there any operation problem encountered during the last Operation Permit period? _____ Yes __X__ No

If yes, explain:

12. Was there any unpermitted discharge to surface water, ground water, municipal sanitary sewer, or to a storm or municipal combined sewer during the last Operation Permit? _____ Yes __X__ No

If yes, explain:

13. Signature of applicant: T. J. Tadler

Title: Plant Manager

Date:

14. Signature of consulting engineer (if needed):

P.E. No.: Phone:

Date:

Address:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

DIVISION OF LAND/NOISE POLLUTION CONTROL

2200 Churchill Road

Springfield, Illinois 62706

(217) 782-6760

APPLICATION FOR A PERMIT

FOR WELL INJECTION

FORM D - OPERATION PERMIT RENEWAL

For Agency Use

Received:

Reviewed:

Reviewer:

O.P. issued:

O.P. No.:

1. Name of applicant: U.S. Industrial Chemicals Co. 2. Telephone: 217-253-3311

3. Mailing address: P.O. Box 218 Tuscola, IL 61953

4. Operation Permit No.: 1977-UIC-3-OP 5. Date of application: Feb. 6, 1978

6. O.P. issuance date: May 13, 1977 7. O.P. expiration date: May 13, 1978

8. List the tests and logs, and attach a copy of them, indicating the condition of injection tube, casing and well structure:

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9. Were any of the permit conditions, the IPCB Regulations and/or provisions of the Environmental Protection Act violated? ____ Yes __X__ No

If yes, explain:

10. Do equipment and facilities related to well injection facility operate properly? X Yes ___ No

If no, explain:

11. Was there any operation problem encountered during the last Operation Permit period? ___ Yes X No

If yes, explain:

12. Was there any unpermitted discharge to surface water, ground water, municipal sanitary sewer, or to a storm or municipal combined sewer during the last Operation Permit? ___ Yes X No

If yes, explain:

13. Signature of applicant: T. J. Tadler

Title: Plant Manager

Date:

14. Signature of consulting engineer (if needed):

P.E. No.: Phone:

Date:

Address:

Division of National Distillers and Chemical Corporation • P.O. Box 218, Tuscola, Illinois 61953 • (217) 253-3311

October 26, 1973

Mr. Ward L. Akers, P. E.
Acting Manager, Permit Section
Division of Water Pollution Control
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706

Dear Mr. Akers:

On October 15, 1973 Mr. Robert L. Kylander and I met with Messrs. McWiggin and Ogg at your Springfield offices to review our June 26, 1973 deep well permit application as well as your September 21, 1973 denial of the permit.

We wish to reopen our application for disposal well operation by this letter which supplements and clarifies the information contained in the original application.

Comments on the four questions in your September 21st letter are as follows:

1. The well as originally designed was to receive and store about 150 million gallons of high-fluoride, low pH water then in inventory as the result of the operation of a wet phosphoric acid plant. The phosphoric acid plant was shut down in 1971 and is now in the final stages of demolition and site cleanup.

   During the time the plant was in operation, the net annual increase in water inventory was nominal since the process was a consumer of water and large amounts of water evaporated from nearly 80 acres of wetted surface during the summer months. When the plant operation ceased, the evaporating area decreased to about 20 acres and the process water consumption dropped to zero. Therefore the area for collecting rainwater runoff is at 60 acres. Consequently, the original request for sub-surface emplacement of only the 150 million gallons then in inventory was too low.

Leaching of the stored gypsum with rainwater has decreased the fluorides in the impounded water, but not enough for surface discharge. The water also contains small quantities of other materials dissolved from the gypsum, such as potassium, calcium and sulfate ions.

Since April, 1972 about 100 gallons per minute of water from an ion exchange regeneration system in our new alcohol operation have been added to the gypsum water pond. This water contains sodium and phosphate ions in concentrations normally found in the gypsum leachate.

Rather than allow used mercury-containing analytical reagents to flow into the sewers, we have begun a program of collecting these wastes. To date approximately four gallons of analytical wastes have been added to the gypsum pond water.

2. In May 1973 we engaged Williams Brothers Waste Control, Inc. to review our method of operating and monitoring the well. Their studies included a new calculation of the area occupied by the wastes on the basis of 300,000,000 total gallons injected. Using a formation consisting of a 50-foot depth at 25% porosity and 459-foot depth at 5% porosity, they calculated a 600-foot radius for the current injection area. They concluded, "We believe this dual injection concept is more representative of actual conditions than when using only the 50-foot zone."

3. The Williams Brothers report included an analysis of injection water for bacteria. They report, "Bacterial tests indicate no significant aerobic or sulfate reducer bacteria growths in the sample of injection waste which was received May 2, 1973."

They reported higher-than-normal turbidity, but concluded: "Turbidity of 40 mg/l. is high for an injection waste but the dolomitic host formation apparently is capable of accepting high concentrations of suspended solids."

On September 14, 1973 Halliburton made a test to determine the static fluid height in the well having filled with fresh water. The results showed no change from the measurement taken in 1970 when the well was commissioned.

On the basis of these reports and our trouble-free operation of the well, we see no limit to the ultimate capacity of the well.

4. Our June 26, 1973 application (page 3) names all of the wastes which are anticipated in the foreseeable future as well as those currently injected. We have not yet injected the following: Cooling tower blowdown, boiler blowdown, and ion exchange regeneration waste from the power plant. They are included in our application so we may best manage the entire chemical complex waste system regardless of adverse stream flow conditions and/or in-plant emergencies resulting from equipment failure.

The primary need for the disposal well continues to be the disposal of fluoride-laden rainfall leachate from 80 acres containing about 1,750,000 tons of by-product gypsum.

A second essential need is to dispose the phosphate-rich waste and occasional organic-containing water from the alcohol unit.

The well is the most logical repository of the mercury-rich laboratory wastes.

Finally, the blowdown streams from boilers, cooling towers and boiler feed-water ion exchange systems complete the list of waste waters to be handled by the well.

The waste composition (see Page 4 of the June 26, 1973 application) is based on previously-determined analysis of gypsum pond water and a combination of known composition and assumed rates for the other wastes.

Additional Information

Our October 15th discussion, we agreed to present additional information relevant to the June 26th operating permit application as follows:

Sampling and Reporting - (Page 4 of the June 26 application)

One sample of injection waste will be taken each day, Monday through Friday; an equal-volume composite will be made on a weekly basis, analyzed for all constituents listed (except mercury, potassium and TOC) and reported monthly. Each quarter one weekly composite will be analyzed for potassium

and mercury also. The BOD value is considered meaningless for this low pH material and need not be reported. Chromium will be reported as total chromium.

Well Alarm System

Attached is an instrument loop sheet showing the controls on the well. In addition to pressure recording instruments on the tubing and the annulus, and the flow recorder, there is a pressure switch (PS-10052) on the annulus set to send a signal to the alarm (PAL-10052) at 20 PSI. The pressure switch opens at 27 PSI and the signal is shut off. The alarm is a large red light located above the deep well building and is checked by the roving guard who makes a tour of the area every two hours.

Well System Reliability

The piping to the well is Sch. 80 PVC pipe; the strainer, instrumentation, and associated piping around the instruments is 316 stainless steel; and the tubing string is PVC-lined pipe. This system has proven reliable for the gypsum pond wastes and will be more than adequate for the new waste materials being proposed.

Plot Plan

USI Drawing No. B-250-3439 is a plot plan of the immediate gypsum pond area and shows also the well location relative to the storage area.

As indicated in our routine reports to the Surveillance Section, by our discussions with you, as well as our Consultant's Report, the performance of the well has been and continues to be an excellent and safe way to dispose of these difficult wastes.

We respectfully request approval of our Operating Permit application.

Very truly yours,

H. L. Teel
Engineering Manager

jw
Att. (2)